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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,629	01/13/2004	Hanan Luss	APP 1563	2435

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EXAMINER

RAMAKRISHNAIAH, MELUR

ART UNIT	PAPER NUMBER
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2643

DATE MAILED: 10/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/756,629

Applicant(s)

LUSS ET AL.

Examiner

Melur Ramakrishnaiah

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,7-15 and 18-21 is/are rejected.
- 7) ☒ Claim(s) 3,4,6,16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3-19-2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5, 7-11, 12-15, are rejected under 35 U.S.C 102(b) as being anticipated by Yu et al. (US PAT: 6,094,580, hereinafter Yu).

Regarding claim 1, Yu discloses a method of determining an offered load estimates for each of the plurality of bins corresponding to geographic regions of a cellular territory wherein a plurality of base transceiver stations (BTS's) service the territory, the method comprising the steps of: computing for each of the plurality of bins (figs. 3-5) a probability of each BTS serving a bin (col. 6, line 4 – col. 8, line 10), solving an equitable resource allocation model to determine the bin offered load estimates based on inputs comprising offered load estimates for each of the plurality of BTS's demand targets for each of the plurality of bins, and the computed probabilities, the equitable allocation module comprising a plurality of resource constraints and objective function wherein resource constraints are expressions describing relations between the computed probabilities, the BTS offered load estimates, and bin offered load estimates and wherein objective function is an expression describing relations between the bin demand targets and bin offered load estimates (col. 13, line 20 – col. 16, line 2).

Regarding claim 12, Yu discloses a method of determining a method of determining weights for performing frequency assignment among a plurality of base

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transceiver stations (BTS's) of a cellular wireless territory, each BTS having an offered load estimate, wherein territory is divided into plurality of logical bins each further having probabilities of being served by each BTS, the method comprising the steps of: determining an offered load estimate for each of the plurality of bins by solving an equitable resource allocation model, the equitable resource allocation model comprising a plurality of resource constraints and an objective function, the resource constraints expressing relations between probabilities of each bin being served by each BTS, the BTS offered load estimates, and the bin offered load estimates, and the objective function expressing relations between the bin demand targets and bin offered load estimates, and using determined bin offered load estimates as weights to perform frequency assignments among bins (col. 1, lines 57-65, col. 2 lines 44-59, col. 13, line 20 – col. 16, line 2).

Regarding claims 2, 5, 7-8, 10-11, 13-15, Yu further teaches the following: probability computing step computes the probabilities based on mean and standard deviation of signal strengths, each BTS's offered load estimate is based on the BTS's carried load and lost calls (col. 7 lines 35-67), receiving as inputs relative demand approximations for cellular wireless service at each of the plurality of bins, and converting the demand approximations to the demand targets such that the sum of the demand targets for plurality of bins equals the sum of the BTS offered load estimates for the plurality of BTS's (col. 12, line 1 – col. 13, line 15), objective function is a vector of non-increasing performance function wherein each performance function corresponds to a bin and is weighted normalize deviation between the bin's demand target and bin's

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offered load estimate, using the determined bin offered load estimates to identify bins with relative high offered load estimates and using the identified bins to service these bins, using the determined bin offered load estimates to perform load balancing among the BTS (col. 7 lines 57-67, col. 15, line 4 – col. 16, line 2), determining means and standard deviations of signal strengths at each bin, and based on means and standard deviations determining the probabilities (col. 7 lines 57-67, col. 13 lines 1-15), probabilities are based on a model that a strongest received signal in a given bin serves a mobile station in that bin, probabilities are based on a model that one or more strongest received BTS signals in a given bin serve a mobile station in that bin, each of the plurality of resource constraints corresponds to a BTS and indicates that a computed offered load for the BTS cannot exceed (col. 15, line 4 – col. 16, line 2).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9, 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu in view of Luss (OR chronicle, Vol 47, No. 3, May-June 1999).

Regarding claim 18, Yu discloses a method for determining an offered load for each of the plurality of bins in a cellular wireless network comprising a plurality of base transceiver stations (BTS), the method comprising the steps of: computing plurality of

probabilities that express BTS to bin service relations (col. 6, line 4 – col. 8, line 10), based on an offered load estimate for each of the plurality of BTS's and cellular wireless service demand approximation at each of the plurality of bins, determining the bin offered load estimates that satisfy a set of resource constraints wherein performance function express relation between the bin wireless service demands and the bin offered load estimates and wherein resource constraints express relations between the computed probabilities, the BTS offered load estimates, and the bin offered load estimates (col. 14, line 28 – col. 16, line 2).

Yu differs from claims 9, and 18 in that it does not teach the following: bin offered load estimates result in a lexicographic smallest vector of performance functions, stored in an non-increasing order, and satisfy plurality of resource constraints.

However, Luss discloses a lexicographic minimax approach which teaches using lexicographic minimax approach to solve resource allocation problems (see abstract).

Thus, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Yu's system to provide for the following: bin offered load estimates result in a lexicographic smallest vector of performance functions, stored in an non-increasing order, and satisfy plurality of resource constraints as this arrangement would provide one of the methods, among many possible methods, to solve resource allocation problems as taught by Luss.

Regarding claims 19-21, Yu teaches the following: probabilities are based on a model that a stronger received signal in a given bin serves a mobile station in that bin, probabilities are based on a model that one or more strongest received BTS signals in a

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given bin serve a mobile station in that bin, using the determined bin offered load estimates to perform frequency assignment among many BTS's (col. 6, line 4 – col. 8, line 10).

5. Claims 3-4, 6, 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melur Ramakrishnaiah whose telephone number is (571)272-8098. The examiner can normally be reached on 9 Hr schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Melur Ramakrishnaiah
Primary Examiner
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